

Claim 1. (canceled)

Claim 2. (canceled)

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Claim 3. (canceled)

Claim 4. (currently amended) The process of claim 10 wherein the fluorine atmosphere comprises  $\text{SiF}_4$ .

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Claim 5. (original) The process of claim 4 wherein the fluorine atmosphere is greater than 10%  $\text{SiF}_4$ .

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Claim 6. (currently amended) The process of claim 10 wherein the outer shell region is undoped silica.

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Claim 7. (currently amended) The process of claim 10 wherein the inner core region is doped with germania.

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Claim 8. (original) The process of claim 7 wherein the inner core region is doped to a  $\Delta n$  in the range 0.001-0.058.

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Claim 9. (canceled)

Claim 10. (new) Process for the manufacture of optical fibers comprising:

preparing an optical fiber preform,

heating the preform to the softening temperature, and

drawing an optical fiber from the optical fiber preform

wherein the optical fiber preform is produced by steps including:

(i) preparing a porous silica body of silica particles, the

porous silica body having an inner up-doped region

surrounded by an outer shell region, said outer shell region

comprising a lower doped region,

(ii) heating the porous silica body to a temperature of at least

1100 °C in the absence of fluorine for a period sufficient to

selectively consolidate the inner up-doped region,

(iii) heating the porous silica body in an atmosphere of a

fluorine compound to produce a fluorine doped preform

region with a refractive index change  $\Delta n$ , the atmosphere

having a partial pressure of fluorine compound that is at least

five times greater than the equilibrium partial pressure  $p$

expressed by  $\Delta n \sim p^{\frac{1}{4}}$  and a temperature maintained below

1050 °C.,

(iv) reducing the fluorine concentration, and

(v) heating the porous silica body at a temperature greater

than 1300 °C, to complete consolidation of the porous silica

body.

Claim 11 (new) Process for the manufacture of an optical fiber preform,  
comprising:

- (i) preparing a porous silica body of silica particles, the porous silica body having an inner up-doped region surrounded by an outer shell region, said outer shell region comprising a lower doped region,
- (ii) heating the porous silica body to a temperature of at least 1100 °C in the absence of fluorine for a period sufficient to selectively consolidate the inner up-doped region,
- (iii) heating the porous silica body in an atmosphere of a fluorine compound to produce a fluorine doped preform region with a refractive index change  $\Delta n$ , the atmosphere having a partial pressure of fluorine compound that is at least five times greater than the equilibrium partial pressure  $p$  expressed by  $\Delta n \sim p^{\frac{1}{4}}$  and a temperature maintained below 1050 °C.,
- (iv) reducing the fluorine concentration, and
- (v) heating the porous silica body at a temperature greater than 1300 °C, to complete consolidation of the porous silica body.

12. (new) The method of claim 10 wherein in step (iv) the fluorine concentration is reduced to essentially zero.